**Automotive Electricity and Electronics**

**Chapter 21 –** **Cranking System Diagnosis and Service**

**Lesson Plan**

**CHAPTER SUMMARY:**

1. Starting System Troubleshooting Procedure, Voltage Drop Testing, and Control Circuit Testing

2. Starter Amperage Test, Starter Removal, Starter Motor Service, and Bench Testing

3. Starter Installation, Starter Drive-To-Flywheel Clearance, and Starting System Symptom Guide

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**OBJECTIVES:**

1. Explain the procedure to troubleshoot a starting system problem.

2. Discuss how to perform a voltage drop test on the cranking circuit.

3. Perform control circuit testing and starter amperage test, and determine necessary action.

4. Describe the procedure to remove a starter motor.

5. Explain starter motor service and bench testing.

6. Describe the procedure to install a starter motor.

7. Describe how to ensure proper clearance between the starter pinion and the engine flywheel.

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**RESOURCES:** [(All resources may be found at jameshalderman.com)](https://jameshalderman.com/)

1. Task Sheet: Starter Relays and Solenoids

2. Task Sheet: Starter Current Draw Test

3. Task Sheet: Starter Circuit Voltage Drop

4. Task Sheet: Remove and Install the Starter

5. Task Sheet: Starter Disassembly and Testing

6. Chapter PowerPoint

7. [Crossword and Word Search Puzzles (A6)](https://jameshalderman.com/a6_puzzles_lib_page/)

8. [Videos: (A6) Electrical/Electronic Systems](https://jameshalderman.com/a6_vid_lib_page/)

9. [Animations: (A6) Electrical/Electronic Systems](https://jameshalderman.com/a6_anim_lib_page/)

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**ACTIVITIES:**

1. Task Sheet: Starter Relays and Solenoids

2. Task Sheet: Starter Current Draw Test

3. Task Sheet: Starter Circuit Voltage Drop

4. Task Sheet: Remove and Install the Starter

5. Task Sheet: Starter Disassembly and Testing

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**ASSIGNMENTS:**

1. Chapter crossword and word search puzzles from the website.

2. Complete end of chapter quiz from the textbook.

3. Complete multiple choice and short answer quizzes downloaded from the website.

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**CLASS DISCUSSION:**

1. Review and group discussion chapter Frequently Asked Questions and Tech Tips sections.

2. Review and group discussion of the five (5) chapter Review Questions.

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**NOTES AND EVALUATION:**

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